IN THE DRAWINGS

The drawing has been objected to for referring to the sole figure as "Fig. 1".

The attached annotated sheet of drawings indicates the removal of the label "Fig. 1". The replacement sheet, which includes the sole figure, replaces the original sheet including Fig. 1, and is in compliance with 37 C.F.R. 1.84(u)(1).

Accordingly, Applicants respectfully request the withdrawal of this rejection.

Attachments: Annotated Sheet and Replacement Sheet

REMARKS/ARGUMENTS

Applicants thank Examiner Langel for the courtesy of an interview extended to Applicants' representative on September 8, 2008. During the interview, Applicants' claim 1 was discussed with respect to arguments of both non-anticipation and non-obviousness in view of *Natsuhara*. Arguments similar to those presented during the interview are reproduced below.

Claim Status

Claims 1-12 are pending. Claims 1-4 and 6 are currently amended. Claims 8-12 are added. Amended claim 1 finds support in the specification: page 9, lines 5-13. Claims 2-4 and 6 are amended for grammatical purposes and to improve readability of the claims. New claim 8 finds support in the specification: page 10, lines 1-4. New claim 9 finds support in the specification: page 10, lines 20-23. New claim 10 finds support in the specification: page 11, lines 5-8. New claim 11 finds support in the support of new claims 8-10. New claim 12 finds support in the specification: page 11, lines 19-21. No new matter has been entered.

The claims have been rejected as follows: (i) claims 1-5 are rejected under 35 U.S.C. §102(b) as anticipated by or, in the alternative, under 35 U.S.C. §103(a) as obvious in view of *Natsuhara* (US 6,294,275); (ii) claims 3-5 are rejected under 35 U.S.C. §102(b) as anticipated by or, in the alternative, under 35 U.S.C. §103(a) as obvious in view of JP '830; (iii) claims 6 and 7 are rejected under 35 U.S.C. §102(b) as anticipated by or, in the alternative, under 35 U.S.C. §103(a) as obvious in view of JP '010; and (iv) claims 6 and 7 are rejected under 35 U.S.C. §103(a) as obvious in view of JP '809. Applicants respectfully traverse these rejections.

Background

In the field of circuitry, integration of circuit boards in powder modules tends to increase the heat generated by the semiconductor device. In view of this problem, aluminum nitride is considered a suitable material for semiconductor devices due to its high thermal conductivity and high insulating properties. Thus, an aluminum nitride sintered body having a high degree of parallelization and being less likely to be warped has been desired. In order to obtain such an aluminum nitride sintered body, it is desired to produce an aluminum nitride sintered body having small sintering shrinkage. Typically, production of an aluminum nitride powder for production of an aluminum nitride sintered body has been performed via an alumina reduction method or a method of direct nitriding of a metal aluminum powder; however, these methods have both merits and demerits.

An aluminum nitride powder obtained by the alumina reduction method typically has a uniform particle size and a small oxygen content as compared with the direct nitriding method, whereby it is easily sintered to produce a sintered body having a high thermal conductivity, but the shrinkage factor at the time of sintering tends to be large, warpage or deformation is likely to occur, and the production cost tends to be high. On the other hand, in the direct nitriding method, the aluminum nitride powder can be easily produced at a low cost, but since the method comprises a grinding step, the obtained aluminum nitride powder tends to contain an increased amount of impurities such as oxygen and the thermal conductivity is barely higher than that achieved by the alumina reduction method. Further, neither of the aluminum nitride powders obtained by these production methods has been able to sufficiently achieve both higher thermal conductivity of the aluminum nitride sintered body and reduction in the shrinkage factor at the time of sintering. Accordingly, a need exists for the production of an aluminum nitride sintered body which achieves both high thermal conductivity and small sintering shrinkage.

As an answer to the above-noted need, Applicants' claimed aluminum nitride powder having specific particle sizes and a specific oxygen amount achieves both high thermal conductivity and small sintering shrinkage. The claimed aluminum nitride powder is prepared by producing several types of aluminum nitride powders differing in the oxygen amount and the particle size and suitably combining them.

Applicants' Claims Not Anticipated by *Natsuhara*

Natsuhara discloses mixing aluminum nitride powders each having differing average particle diameters to obtain a mixed powder having 1-95 wt% of particles with an average particle diameter of 1.0 μm or less (Abstract; Example 1). More specifically, samples 3 and 5 of example 1 of *Natsuhara* disclose mixtures of powders as follows:

Sample 3:
a) 20 wt% of AlN powder with an average particle diameter of 0.2 μm
b) 40 wt% of AlN powder with an average particle diameter of **2.0 μm**
c) 40 wt% of AlN powder with an average particle diameter of 1.0 μm

Sample 5:
a) 10 wt% of AlN powder with an average particle diameter of 0.2 μm
b) 60 wt% of AlN powder with an average particle diameter of **2.0 μm**
c) 30 wt% of AlN powder with an average particle diameter of 1.0 μm

In comparison, Applicants' claim 1 requires an AlN powder comprising:

a) 0.5-20 vol% of particles 0.3 μm or less in size
b) 40-70 vol% of particles from **3-15 μm** in size
c) 25-40 vol% of particles from 0.5-1.5 μm in size
wherein the oxygen content of the powder is 0.5-1.5 mass%.

Thus, as can be seen by the above samples, *Natsuhara* does not incorporate particles in the size range of 3-15 μm as required by Applicants' claimed powder. Instead, *Natsuhara* only discloses particles with an average diameter of 2.0 μm at the largest. Furthermore, *Natsuhara* is silent with respect to the oxygen content of the mixed powder which is another requirement of Applicants' claimed powder. Accordingly, *Natsuhara* is not anticipatory of Applicants claimed AlN powder.

Applicants' Claims Not Rendered Obvious by *Natsuhara*

Natsuhara neither discloses nor suggests powders with particle sizes from 3-15 μm. In fact, *Natsuhara* discusses the undesirability of sizes from "7 to 8 μm or more" (col. 1, lines 25-28). Accordingly, without a disclosure of at least an overlapping range of particles with 3-15 μm in size, a *prima facie* case of obviousness in view of *Natsuhara* does not exist.

Even if, for arguments sake, a *prima facie* case of obviousness in view of *Natsuhara* did exist, Applicants point out the criticality of the claimed particle size ranges. More specifically, comparative example 2 (specification: Table 2, pages 26-27) has a very similar composition to that of sample 5 of *Natsuhara* in that it comprises 60% of 2 μm particles instead of 60% of 3-15 μm particles. As can been seen in the second page of Table 2, this one change, which renders the powder almost identical to that of *Natsuhara*, results in high shrinkage (16% instead of the desired 15% or less) and low thermal conductivity (187 instead of the desired more than 190). On the other hand, when a powder satisfies all of the limitations of Applicants' claim 1 (e.g., Table 1, Example 2), low shrinkage (13%) and high thermal conductivity (202) can be obtained. Please refer to the side-by-side comparison below.

	Applicants' Example 2		**Applicants' Comp. Example 2**		***Natsuhara's* Sample 5**	
	size (μm)	amount (vol%)	size (μm)	amount (vol%)	size (μm)	amount (vol%)
coarse particles	10	60	2	60	2	60
medium particles	1	30	1	30	1	30
fine particles	0.1	10	0.1	10	0.2	10

Accordingly, Applicants' claimed powder is non-obvious in view of *Natsuhara*.

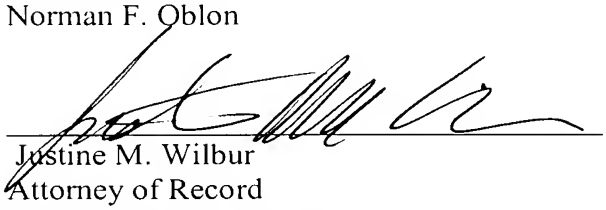
Conclusion

As the remaining claims (2-12) include all of the limitations of the novel and non-obvious powder of claim 1, and the remaining references of record do not fulfill the deficiencies of *Natsuhara's* disclosure, Applicants submit that all now-pending claims are in condition for allowance.

Accordingly, Applicants respectfully request the withdrawal of the rejections and passage of this case to issue.

Respectfully submitted,

OBLON, SPIVAK, McCLELLAND,
MAIER & NEUSTADT, P.C.
Norman F. Oblon



Justine M. Wilbur
Attorney of Record
Registration No. 59,678

Customer Number
22850

Tel: (703) 413-3000
Fax: (703) 413 -2220
(OSMMN 08/07)